

# Research on the Influencing Factors and Management Countermeasures of College Students' Sense of Security under the Environment of Big Data-an Empirical Analysis based on the Event of COVID-19

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## ABSTRACT

Exposed in environment of big data, college students come easily into contact with massive data presentation. When crisis events occur, college students will be affected not only by crisis events but also by human psychological crisis. The greater psychological threat, faced by college students in the crisis environment, is the loss of sense of security. Through literature review, the hypotheses in crisis events are as followed: crisis events, government and media response, university coping measures, group coping behavior are the four main factors that affect college students' sense of security in crisis events. The outbreak of COVID-19 in Wuhan, Hubei affecting all the people, all colleges and universities across the country delayed the opening time. Among the affected universities, take the University of Electronic Science and Technology as an example, 600 samples were randomly selected to collect data. Through the exploratory factor analysis test, the influence hypotheses are verified. Through the structural equation model test, the four kinds of factors can explain the loss of college students' sense of security in the crisis, but show differences in explanatory power. Based on the elements of college students' sense of security, this paper puts forward an further explanation on the action path of the four factors on the public sense of security. According to the conclusion, we come to the conclusion that improving the coping ability of colleges and universities, enhancing the sense of crisis determination and the efficiency of control are the key to improve college students' sense of security and ensure the effectiveness of crisis management in colleges and universities.

## CCS Concepts

•Social and professional topics → Professional topics → Management of computing and information systems → Project and people management → Project management techniques

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## Keywords

big data; college students' sense of security; crisis events; government and media's response; coping measures of colleges ;dealing with emergency in groups; structural equation model

## 1. INTRODUCTION

The third scientific and technological revolution marked by the electronic computer has brought mankind into the era of big data [1]. Big data, with its massive data scale and fast data flow, will have a great impact on the human way of life. Facing the data of the network, the public will show different psychological and behavioral characteristics.

A crisis event is often caused by the joint influence of "objective crisis of events" and "subjective crisis of human beings". The negative impact of subjective crisis of human beings, however, is often greater than that of events. Although it has been 18 years since 9 / 11, but its psychological fear of people will have a long-term impact on American society. After COVID-19 broke out in Wuhan, Hubei Province and driven by the reports and popularity of online news, citizens lined up overnight to scramble for Shuanghuanglian, which is a kind of oral liquid of traditional Chinese medicine. Ironically, even Shuanghuanglian used for animal were sold out on the Internet. The driver behind this "storm" is people's inner fear of the crisis. When the crisis appears, the biggest threat to the public is the loss of sense of security, which is the most prominent feature of public emergency psychology after emergencies. As far as colleges and universities are concerned, college students' sense of security is the key to college students' mental health, because students' healthy mental state is the basis of orderly management and good education in colleges and universities. Therefore, understanding the influencing factors of college students' sense of security in the crisis and improving the management measures are the focuses of the educational management of colleges and universities.

On the basis of the existing research, this paper designs the influencing factor model of college students' sense of security, collects data through questionnaire survey, analyzes the relationship between the data and the characteristics of the data based on SPSS software, and analyzes the influencing factors of public sense of security based on AMOS structural equation. Besides, it measures the action path of various factors on college students' sense of security. Based on this, it designs the sense of security governance mechanism of college students in the crisis.

## 2. THE DEFINITION OF SENSE OF SECURITY FOR COLLEGE STUDENTS

According to the research of scholars at home and abroad, sense of security is a sense of group belonging and self-belonging [2]. The "college student sense of security" proposed in this paper refers to the sense of belonging, the sense of control and the satisfaction of safety needs experienced by college students in a certain public environment [3]. Among them, the sense of belonging refers to the warm and reliable subjective experience formed by college students who care of other members of the society under the pressure of event crisis. Determining the sense of control means that in the context of the crisis, college students obtain timely, sufficient and consistent information from the mainstream information channels to recognize and control the certainty of the cause, process and development trend of the crisis. The satisfaction of security needs refers to the subjective experience of college students to deal with the crisis effectively on the basis of fully understanding the occurrence and development of crisis events.

## 3. RESEARCH HYPOTHESIS

### 3.1. Construction of Sense of Security Influence Model for College Students

On the basis of literature research, in the crisis, we assume that the crisis itself, government and media response, university response measures, group emergency behavior are the four main factors that affect college students' sense of security. On the basis of this, we construct a conceptual model that affects college students' sense of security in crisis events. As shown in Fig. 1.

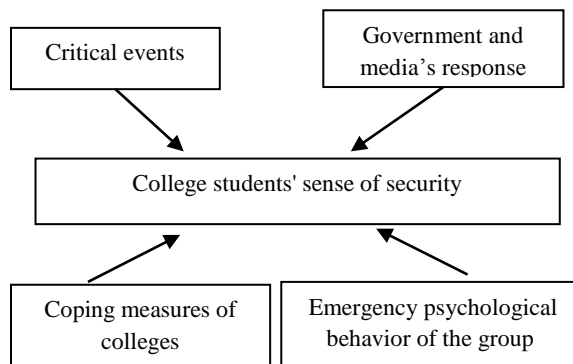


Figure 1. Model of the influencing factors of college students' sense of security in the events

### 3.2. Research Hypothesis

The relationship between everyone and the environment is basically in a state of dynamic balance, Caplan and Edward believe, when a person is facing a disaster or crisis, a series of psychological problems such as high tension, anxiety, pessimism and disappointment will occur because the crisis is beyond the psychological capacity [4]. This assumes that:

H1: In crisis events, the scope of influence of crisis events and the degree of casualties are negatively correlated with the level of sense of security of college students. The higher the severity of the crisis, the more insecure college students feel.

The "Media dependence Theory" put forward by Melvin DeFleur, a famous American communicator, points out that when great changes have taken place in society but the situation is unknown, people are often eager to know the truth through the government and the media, and the dependence will be significantly increased.

The timely early warning of the government and the media and objective and impartial reports, therefore, are conducive to calm the hearts of the people and prevent the further deterioration of the situation. [5] .

H2: In the crisis, the ability of the government and the media to deal with emergencies is positively related to college students' sense of security. The more timely and effective the government media work, the safer the college students feel.

As a special group of the society, college students do not fully enter the society and have a certain dependence on their families and schools. when there is a crisis in the society, the measures taken by the campus they rely on will directly affect the psychological state of college students.

H3: In the crisis, the timeliness and perfection of college response measures are positively related to college students' sense of security. The more complete the emergency measures of colleges and universities to the crisis, the safer the college students feel.

According to the widely verified theory of "herding behavior", individuals often adopt the same behavior strategy under the influence of other people's behavior strategies in a state of crisis, that is to say, the individual's behavior choice is to imitate the public or rely too much on public opinion rather than based on their own information. They tend to follow the crowd. Therefore, this paper assumes that:

H4: In emergencies, the psychology and behavior of groups around college students are positively correlated with college students' sense of security. The more rational the group emergency behavior is, the safer the college students feel.

## 4. RESEARCH METHODS AND TOOLS

### 4.1. Scale

In this paper, the data were collected by questionnaire, and the subjects were randomly selected from the students of the University of Electronic Science and Technology. The questionnaire is divided into three parts, the first part is the measurement of college students' sense of security, and the subjects are asked to score their own sense of security; the second part is the measurement of college students' sense of security in crisis events; the third part is a survey of the four hypothetical factors, and finally forms a formal scale through factor analysis and project analysis.

### 4.2. Descriptive Statistical Analysis

A total of 600 questionnaires were distributed and 581 valid data were collected, with a recovery rate of 96.8%. After excluding unqualified questionnaires, 572 questionnaires were valid, and the effective rate of the questionnaire was 95.2%.

### 4.3. Internal Consistency Check

For the third part of the questionnaire, the internal consistency of the sample is analyzed by using SPSS software. As shown in Tab 1.

The results show that the alpha coefficient is 0.839, which proves that the questionnaire has a good internal consistency, indicating that the design of the questionnaire is scientific.

Table 1. Analysis results of the Internal consistency

Alpha of Cronbach	Alpha of Cronbach that is base on standardized project	Number of the projects
0.843	0.841	20

## 5. REFERENCES EXPLORATORY FACTOR ANALYSIS AND MODEL CONSTRUCTION

### 5.1. Exploratory Factor Analysis of Influencing Factors

The SPSS software is used for exploratory factor analysis of the samples. V13 to V30 are the corresponding items of the four influencing factors in the questionnaire. Among them, v13 to v15 corresponds to crisis event factors, v16 to v21 corresponds to government and media response, v22 to v25 corresponds to university response measures, and v26 to v30 corresponds to group emergency behavior.

The results of exploratory factor analysis show that the influencing factors are mainly aggregated in four aspects, which is consistent with the hypothesis of the paper. The aggregation effect of the four factors is good. As shown in Tab. 2.

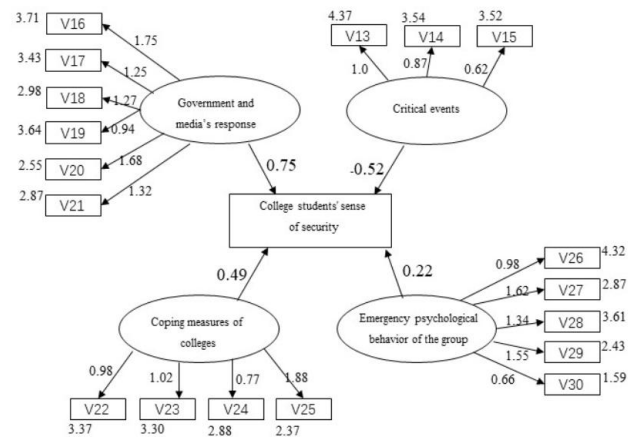
**Table 2. Results of exploratory factor analysis**

	Elements			
	1	2	3	4
V13				0.843
V14				0.768
V15				0.627
V16	0.756			
V17	0.722			
V18	0.675			
V19	0.747			
V20	0.698			
V21	0.825			
V22			0.673	
V23			0.654	
V24			0.46	
V25			0.73	
V26		0.765		
V27		0.741		
V28		0.608		
V29		0.65		
V30		0.63		

Attainment Method: Element analysis of the subject.

### 5.2. Factors Model Test of Influencing Factors of College Students' Sense of Security

Based on the above four aggregated factors, this paper uses Amos software to test the structural equation model, and each index meets the expectation, as shown in Fig.2. It can be seen that the four factors have strongly explained the influence of college students' sense of security.



**Figure 2. Model of the influencing factors of college students' sense of security**

Among them, only the impact of crisis events on college students' sense of security is negative, indicating that there is a negative correlation between crisis events and college students' sense of security, while the other three factors have a positive impact on college students' sense of security. At the same time, according to the magnitude of the influence of various factors on college students' sense of security, we can see that the coping ability of the government and the media has greatest impact on college students' sense of security, followed by the severity of the crisis and the coping measures of colleges and universities, and the impact of group coping behavior is relatively minimal.

### 5.3. Exploratory Factor Analysis And Test of College Students' Sense of Security Structure Dimension

We divide the structural dimensions of college students' sense of security into three dimensions: the sense of belonging, the sense of definite control and the safety needs. These are tested by exploratory factor analysis with SPSS, and the results are shown in Tab 3:

**Table 3. Exploratory factor analysis of the structure dimension of college students' sense of security**

	Rotation matrix of the components		
	1	2	3
V3	0.708		
V4	0.624		
V5	0.641		
V6	0.557		
V7		0.608	
V8		0.876	
V9		0.567	
V10			0.752
V11			0.78
V12			0.64

It can be seen that the ten items are well aggregated in three categories, and the coefficient meets the statistical requirements.

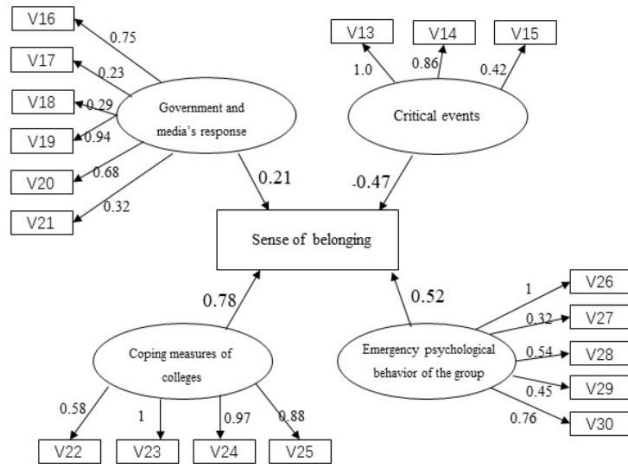
Among them, V3, V4, V5 and V6 are aggregated into the first dimension, V7, V8 and V9 are aggregated into the second dimension, and V10, V11 and V12 are aggregated into the third dimension. This is consistent with the assumption of the questionnaire. According to the questionnaire design, we summarized the first dimension as the sense of belonging, the second dimension as the safety needs, and the third dimension as the sense of definite control.

## 5.4. The Effect of Influencing Factors on College Students' Sense of Security

On the basis of determining the model of influencing factors of college students' sense of security, on the question of how each factor acts on college students' sense of security, we further explore the action mechanism of the structural elements of sense of security by analyzing the influencing factors.

### 5.4.1. The Action Path of Influencing Factors on The Sense of Belonging

First of all, model text all the influence factors of college students' sense of security and their first element of the sense of security structural-"personal sense of belonging", which is tested by structural equation model, and the results are shown in Fig. 3.

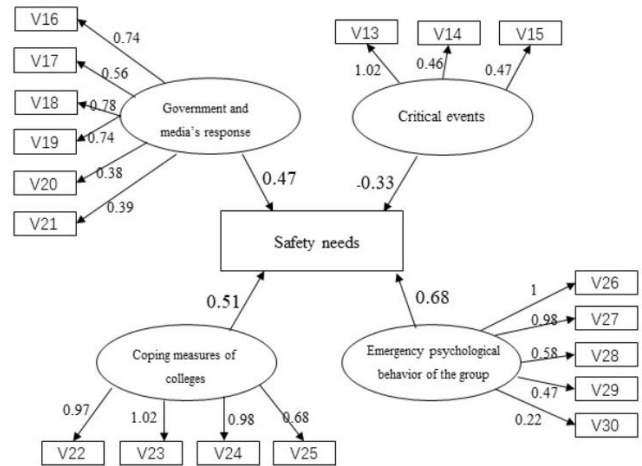


**Figure 3. Model of how the influencing factors affect the sense of belonging**

The results show that the coping measures of colleges and universities have the strongest influence on personal sense of belonging, while the government and media have the weakest influence. The results may be affected by the characteristics of college students. As college students, the communication and publicity of college coping measures have a direct impact on the psychological state and emotional attribution of college students. As an epidemic event caused by man-made reasons, when the epidemic occurred, the credibility of the government and the media declined in the hearts of college students. College students are worried that the COVID-19 will have an impact on their studies and development, and the timely response measures and follow-up arrangements of colleges and universities will make them have a "sense of organizational belonging", which is consistent with the reality.

### 5.4.2. The Action Path of Influencing Factors on Safety Needs

The effect path of the influencing factors on the second structural element of college students' sense of security-"security needs" is tested by structural equation model, as shown in Fig. 4.

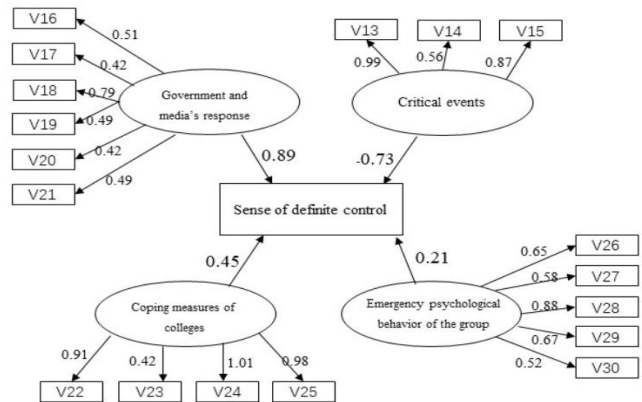


**Figure 4. Model of how the influencing factors affect the safety needs**

The results show that group coping behavior is the most important factor affecting safety needs, followed by university response measures and government and media response. Under the background of big data, because of the network connection between people, college students will understand the development and changes of the crisis and the response of the surrounding personnel through the network every day, and communicate in real time. Online big data enables college students to keep abreast of the latest quick reports of crisis events and the coping measures of surrounding groups. Therefore, group coping behavior can provide demonstration and guidance to individuals. The more rational the group coping behavior, the stronger the sense of security needs of college students.

### 5.4.3. The Action Path of Influencing Factors on The Sense of Definite Control

The effect of influencing factors on the action path of "determining the sense of control", the third structural element of college students' sense of security, is tested by structural equation model, as shown in Fig.5.



**Figure 5. Model of how the influencing factors affect the sense of definite control**

The results show that government and media coping are the most important factors affecting college students' sense of control, followed by the crisis itself, and group coping behavior has relatively little influence on the sense of control. In this role model, the government and the media have a greater impact, because the access to adequate, correct and timely information is the key to enhance the sense of control. In our country, the government and the media have the ability to grasp the emergency system information, release the real information fully and accurately on the Internet, and hold press conferences in time to answer public questions, so that they can get complete information is conducive to social stability. Therefore, the effective response of the government and the media is an effective way to improve college students' sense of control.

## 6. COUNTERMEASURE AND THINKIN

Under the crisis, the biggest problem faced by college students is a series of psychological crises caused by the loss of sense of security. Because sense of security is a subjective cognitive concept and is affected by self-psychology, we can influence sense of security through certain means and ways to give crisis assistance and relief to the need.

When the crisis occurs, the construction of college students' sense of security is the starting point of emergency psychological governance[6]. The determination of the influencing factors and degree of college students' sense of security provides the basis and direction for us to build the psychological governance system of crisis in colleges and universities. This paper constructs the countermeasure system of psychological management of crisis in colleges and universities from the following three aspects.

### 6.1. Countermeasures to Improve the Coping Ability of Colleges and Universities

In the measurement of the influencing factors of college students' sense of security, the countermeasures of colleges and universities have a greater impact on college students' sense of security. The coping measures of colleges and universities will have a direct impact on college students' sense of security. Therefore, it is very necessary to improve the emergency measures of colleges and universities. The countermeasures of colleges and universities should include not only the measures to deal with the direct negative consequences of the crisis, but also the potential consequences of the crisis, such as dredging the psychological problems of college students, opening online psychological counseling channels for college students, and so on.

### 6.2. Countermeasures to Improve the Sense of Crisis Certainty

The response of the government and the media is the key factor affecting college students' sense of security. The media's non-scientific reports on the crisis and the lag of government emergency measures will seriously lead to the reduction of college students' sense of security, which leads to the amplification of college students' panic. The government and the media should play the role of "information transmission" in time to enhance the sense of certainty of college students' information acquisition in the case of information asymmetry. The emergency measures of government departments cooperate with the information release of

the media and the guidance of public opinion to ensure the timeliness, adequacy and accuracy of information can enhance college students' sense of crisis determination.

### 6.3. Pay Attention to the Countermeasures of Building a Sense of Control

This study also validates the hypothesis that the severity of the crisis itself has an impact on the crisis psychology of college students. The panic of college students in the face of the crisis is an important reason for the loss of sense of security. The construction of a sense of control should be committed to allow college students to know how to deal with the crisis. Strengthening crisis education in colleges and universities to make college students rational and orderly when facing the whole crisis should become an important topic of emergency psychological governance in colleges and universities. We should make every effort to build a four-in-one social crisis education system involving government, media, social organizations and colleges and universities, breaking the boundaries between schools, governments, and the media[8]. Strive to cultivate college students in the new era with complete personality and physical and mental health.

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